

## Chapter 1: Driving the Roads

p. 2

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pass a driving course

2-3 min -2/min over 6min

demonstrate basic knowledge

20 — Relationships & factors: following, braking, & total stopping distance

20 — yellow light

20 — speed, friction, radius of curve

20 graphs / Charts 2 (5pts each extra)  
computers can be used

15 Submit written report

95

WDYS

- front cars are near each other, back cars more spread out
- lady in convertible at higher speed because her hair is sticking straight back in the wind
- 4 of 5 cars have more than 1 passenger
- cars in back are faster than those in front because of the following distance
- blue car driver worried about safety because driver in yellow car is trying to go faster than she is driving
- passenger in red car noticed yellow car

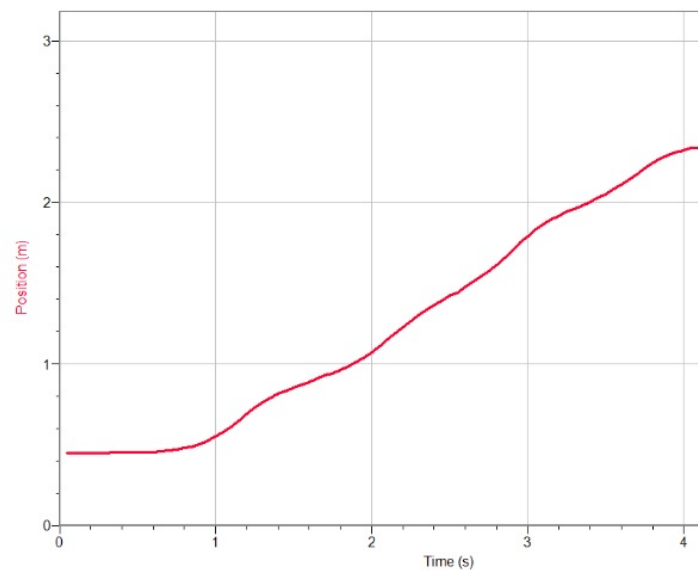
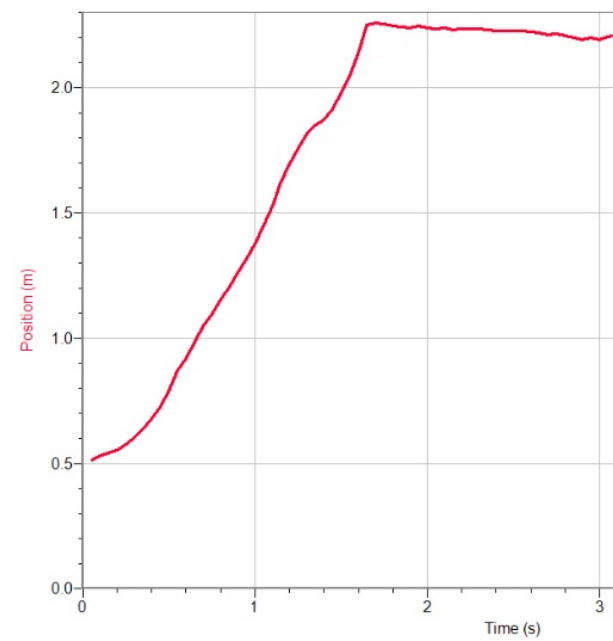
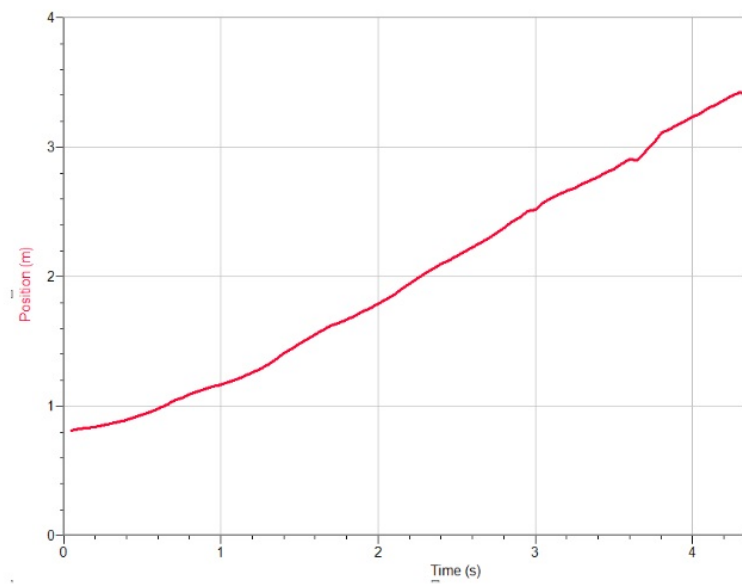
WDYT

Safe following distance 5m, 3m

should be able to see tires of car in front  
(where they are on the road)

might want to be further away when driving  
faster

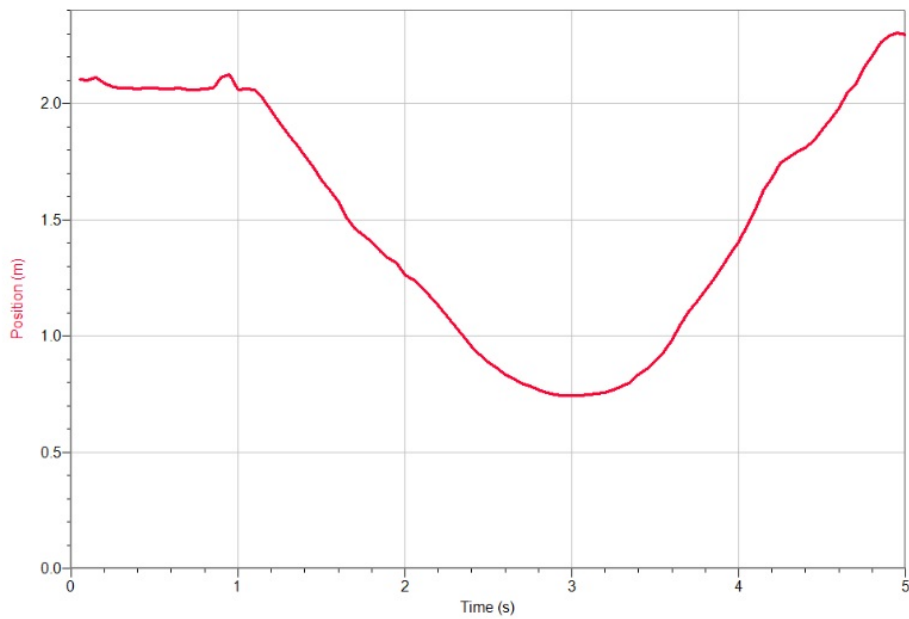
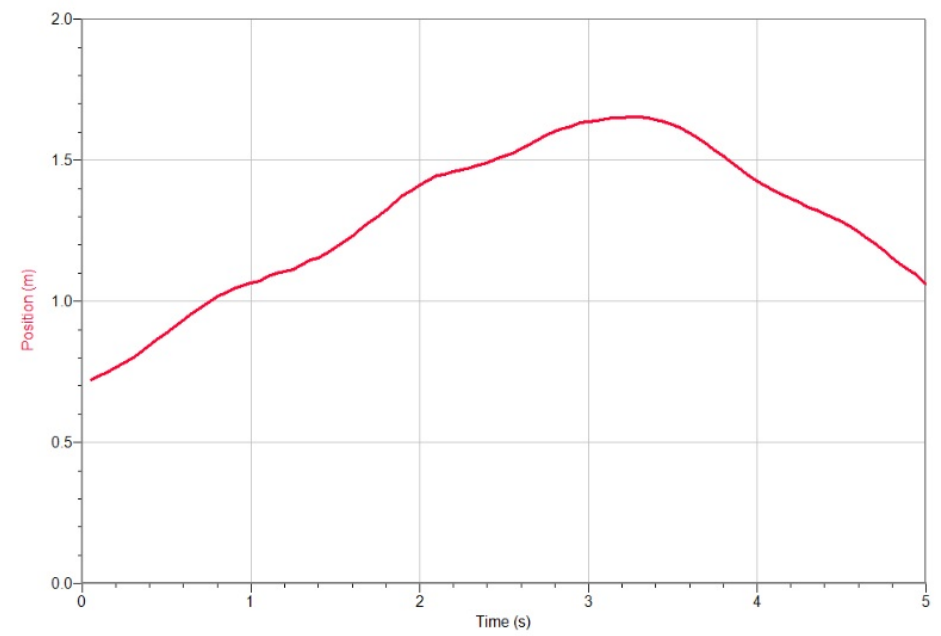
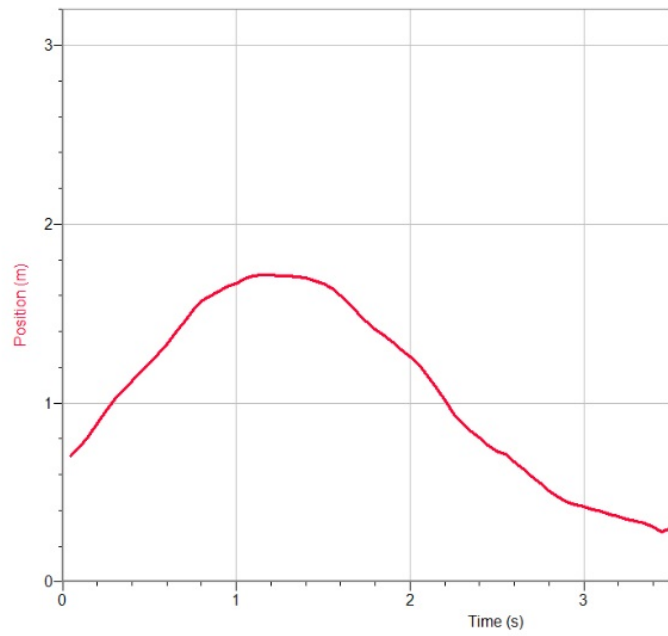
Count the time between cars



Normal

Fast

Slow



Towards & Away

Away & Towards

Fast

Slow

$$\text{speed} = \frac{\text{distance travelled}}{\text{unit time}}$$

$$\left(\frac{\text{m}}{\text{s}}\right) \quad (\text{m}) \quad \div \quad (\text{s})$$

$$\text{average speed} = \frac{\text{distance}}{\text{time}}$$

$$v_{\text{av}} = \frac{\Delta d}{\Delta t}$$

$\vec{v}$

Odometer  
 speedometer  
 chronometer

distance  
 speed  
 time

$\Delta$  delta - change in  
 $v$  - velocity  
 speed + direction

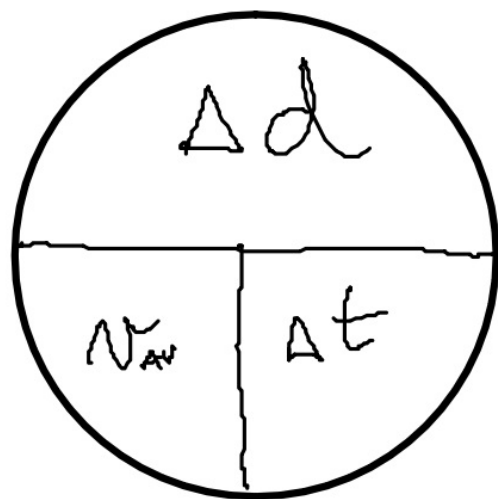
SP1 400 mi 8 hr

$$v_{av} = \frac{400 \text{ mi}}{8 \text{ hr}} = 50 \frac{\text{mi}}{\text{hr}} \text{ mph}$$

$$v_{av} = \frac{\Delta d}{\Delta t}$$

$$\Delta d = v_{av} \Delta t$$

$$\Delta t = \frac{\Delta d}{v_{av}}$$



## 1.4 Graphing Motion: Distance, Velocity, and Acceleration p. 52

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**WDYS** Red car is accelerating faster than the yellow one  
a man is running w/ a dog away from the red car  
cars moved when light turned green  
Red - sport car    yellow - family car

**WDYT**

Similar

Both start at the same time  
and place. (Traffic light)

Both started at 0 mph  
and ended at 30 mph

Differences

The bus is a larger vehicle.  
weighs more and is slower

The car will reach the limit faster.

The acceleration is different. The car will be ahead.



Distance/Position (m) vs. Time (s)

$$\begin{array}{l} (0.1, 0.52) \\ (0.3, 0.9) \end{array} \quad \frac{0.9 - 0.52}{0.3 - 0.1}$$

$$\frac{\cancel{38}19}{\cancel{20}10} \quad \frac{\cancel{0.38} \times 10}{\cancel{0.2} \times 10} = 1.9 \frac{\text{m}}{\text{s}}$$
$$\frac{3.8}{2}$$

Slope = Velocity

Velocity (m/s) vs. Time (s)

Slope = acceleration

$$a = \frac{\Delta v}{\Delta t}$$

$\Delta v$  = Change in  
Speed \*  
and/or  
Direction \*

